REMARKS

The examiner is thanked for the performance of a thorough search. By this amendment, Claim 1 has been amended. No claims have been cancelled or added. Hence, Claims 1-14 are pending in the Application. The amendments to the claims as indicated herein do not add any new matter to this application. Furthermore, amendments made to the claims as indicated herein have been made to exclusively improve readability and clarity of the claims and not for the purpose of overcoming alleged prior art. Each issue raised in the Office Action mailed March 25, 2004 is addressed hereinafter.

SUMMARY OF REJECTIONS/OBJECTIONS

I. Issues Not Relating to Prior Art

Claims 1-14 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Office Action states, "regarding claim 1, there is insufficient antecedent basis for 'said database management system' in the claim." Applicant believes the following amendments have corrected any and all antecedent basis issues for all pending claims.

In Claim 1, line 2, "a database system" has been amended to read "a database management system" to correct any antecedent basis issues with dependent claims that mention the same. Therefore, it is respectfully submitted that this rejection be withdrawn.

II. Issues Relating to Prior Art

Claims 1-5 and 10-14 were rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,480,836 to Colby, et al. (*"Colby"*). A claim is anticipated under §102 only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." MPEP §2131, citing *Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Applicant respectfully submits that the Office Action does not show that every element of each claim is expressly taught by the cited reference. Therefore, the Office Action fails to present a *prima facie* case of unpatentability, and the rejection of Claims 1-5 and 10-14 under §102(e) is respectfully traversed.

Additionally, Claims 6-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Colby* in view of US Patent No. 6,272,502 to Lieuwen, et al. (*"Lieuwen"*). To establish a *prima facie* case of obviousness, there must be some suggestion or motivation to combine reference teachings. Second, there must be a reasonable expectation of success, and finally, the prior art references must teach or suggest all the claim limitations. MPEP §2142. Applicant respectfully submits that there is no suggestion to combine *Colby* and *Lieuwen*. Further, the combination of *Colby* and *Lieuwen* does not teach every element of the claimed invention. Therefore, the Office Action fails to present a *prima facie* case of obviousness, and the rejection of Claims 6-9 under §103(a) is respectfully traversed.

Claim 1

First, Claim 1 recites:

> A method for managing materialized views, the method comprising the steps of:
>
>> a database management system receiving a request to generate a materialized view that contains **objects of an object class;**
>>
>> in response to receiving said request, said database management system creating said materialized view; and
>>
>> said database management system performing operations on said **objects as instances of said object class.**

(Emphasis added)

Importantly, the terms **"objects of an object class"**, and **"objects as instances of said object class"** are emphasized. The ability to generate materialized views of objects that are part of an object class, and the ability to perform operations on object instances of said object class are significant to the claimed invention and not taught by *Colby*. No portion of *Colby* contains any language regarding a "materialized view that contains objects of an object class." Clearly, one of ordinary skill in the art would understand "objects of an object class" and "objects as instances of said object class" to convey "objects" distinct to an object-oriented paradigm. The Office Action does not show how *Colby* teaches the creation of materialized views that contain objects of an object class, nor does *Colby* teach the use of materialized views in conjunction with an object-oriented paradigm. In fact, *Colby* teaches only "precomputed views" of conventional **"relational database models"** (*See Colby*, Col. 2, line 44), and no part of *Colby* teaches the use of materialized views to display objects in an object class. In fact, conventional database management systems, as the one in *Colby*, do not have the capability to support materialized views that contain objects of an object class because such systems do not

have the ability to analyze object oriented syntax commands. However, Claim 1 clearly recites a method of generating a materialized view that contains "objects of an object class." In contrast, *Colby* only teaches the ability to " identify relationships between precomputed'tables, enabling the Rewriter to compute one precomputed table from another precomputed table, and allows arbitrary dimensional hierarchies, fact aggregate tables and dimensional precomputed tables to be defined."(*Colby*, Col. 8, line 66- Col. 9, line 6). However, *Colby* does not teach the ability to define object classes and identify and define the attributes of objects instances, nor does *Colby* teach the ability to create materialized views based on object-tables that contain object instances of an object class.

The difference between *Colby* and the invention of Claim 1 is significant. The advantages associated with object-oriented materialized views over *Colby* and other conventional database management systems are numerous. First, in relational databases, entities are modeled in terms of tables with columns and rows, where each row contains a value for each column, thus enabling relation between values in columns. However object-oriented database management systems allow entities to be modeled as instances of an object class, where the object class may be associated with one or more attributes and zero or more methods. This enables the ability to create multiple object tables with identical columns without having to create, for each table, a separate set of identical definitions for the columns. However, relational databases require two separately stored table definitions. It is clear that *Colby* teaches a method tailored for relational databases instead of object-oriented databases. Specifically, *Colby* states, " aggregate processing **in relational databases** typically involves retrieving qualifying fact records based upon dimensional constraints," and that " precomputation often results in dramatic gains in aggregate processing." (*Colby*, Col. 5, lines 26-27 and 34-35) Therefore, clearly, *Colby*

only teaches precomputed views for **relational tables**, and does not expressly or inherently teach the ability to create materialized views for object-oriented tables containing objects of an object class. However, Claim 1 features the ability of creating materialized views that contain objects of an object class, thus combining the ability to create materialized views with all the advantageous of object-oriented database management systems that are not available in the system described by *Colby*. Therefore, because *Colby* does not teach every element of the claimed invention, the rejection of Claim 1 under §102(e) is respectfully traversed.

Claims 6 - 8

Next, Claims 6-8 were rejected under §103(a) for being unpatentable over *Colby* in view of *Lieuwen*. Specifically, the Office Action states that *Colby* discloses all the claimed subject matter except the "step of generating refresh code that refreshes said materialized view based on modifications to one or more base tables of the materialized views," and that "it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of refreshing materialized views of Lieuwen into the system of Colby so that the materialized view could be refresh[ed] every time the database have been modified" and " the motivation would have been to enable the *Colby* system to include up to date view, thus providing accurate results."

However, Applicant respectfully submits that there is nothing in either *Colby* or *Lieuwen* that teaches or suggests combining their respective teachings. As the Federal Circuit has held, "broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence'" of suggestion. *In re Dembiczak*, 50 USPQ.2d 1617 (Fed. Cir. 1999). Instead, a proper obviousness analysis requires "particular factual findings regarding the locus of the suggestion, teaching, or motivation

to combine prior art references." *Id.* However, the Office Action does not attempt to show in particular how either *Colby* or *Lieuwen* teach, suggest, or motivate the combination of their teachings, and neither *Colby* nor *Lieuwen* contain such a teaching, suggestion or motivation.

Nonetheless, the combination of *Colby* and *Lieuwen* would still fail to teach all claim limitations as discussed above because *Colby* does not teach generating materialized views that contain objects of an object class, nor does *Lieuwen* teach anything related to object-oriented database management systems. Therefore, Applicant respectfully submits that the rejection of claims 6-8 is traversed.

III. Pending Claims

The pending claims not discussed so far are dependant claims that depend on an independent claim that is discussed above. Because each of the dependant claims include the limitations of claims upon which they depend, the dependant claims are patentable for at least those reasons the claims upon which the dependant claims depend are patentable. Removal of the rejections with respect to the dependant claims and allowance of the dependant claims is respectfully requested. In addition, the dependent claims introduce additional limitations that independently render them patentable. Due to the fundamental difference already identified, a separate discussion of those limitations is not included at this time.

For the reasons set forth above, Applicant respectfully submits that all pending claims are patentable over the art of record, including the art cited but not applied. Accordingly, allowance of all claims is hereby respectfully solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Respectfully submitted,

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Dated: June ২l , 2004

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on _June ২l_ by _Trudy Bagdon_